

What is claimed is:

1. A recombinant nucleic acid comprising a nucleotide sequence encoding an autocatalytically cleaving ribozyme and one or more trans-acting ribozyme(s), operably linked to a tissue-specific or pathogen-specific promoter.
5
2. A recombinant nucleic acid comprising a nucleotide sequence encoding one or more ribozyme cassette(s); operably linked to a tissue-specific or pathogen-specific promoter.
- 10 3. The recombinant nucleic acid of claim 2 wherein the ribozyme cassette is pClip (as depicted in Figure 2).
4. The recombinant nucleic acid of claim 2 wherein the ribozyme cassette is pChop (as depicted in Figure 3).
15
5. The recombinant nucleic acid of claim 2 wherein the ribozyme cassette is pSnip (as depicted in Figure 4).
6. A vector comprising a recombinant nucleic acid encoding a nucleotide sequence
20 encoding an autocatalytically cleaving ribozyme and one or more trans-acting ribozyme(s), operably linked to a tissue-specific or pathogen-specific promoter.
25
7. A vector comprising the recombinant nucleic acid claim 3, and an origin of replication.
8. A vector comprising the recombinant nucleic acid claim 4, and an origin of replication.
9. A vector comprising the recombinant nucleic acid claim 5, and an origin of
30 replication.
10. A recombinant cell containing the vector of claim 6.
11. A recombinant cell containing the vector of claims 7, 8, or 9.

35

12. A virion comprising a recombinant nucleic acid comprising a nucleotide sequence encoding an autocatalytically cleaving ribozyme and one or more trans-acting ribozyme(s), operably linked to a tissue-specific or pathogen-specific promoter.

5 13. A virion comprising the vector of any of claims 6, 7, 8, or 9.

14. The virion of claim 12 which is a bacteriophage.

15. The bacteriophage of claim 14 which is a P1 bacteriophage.

10 16. The bacteriophage of claim 14 which is a lamda bacteriophage.

17. A liposome composition comprising a recombinant nucleic acid comprising a nucleotide sequence encoding an autocatalytically cleaving ribozyme and one or more trans-
15 acting ribozyme(s); operably linked to a tissue-specific or pathogen-specific promoter.

18. A liposome composition comprising the vector of any of claims 6, 7, 8, or 9.

19. The nucleic acid of claim 2, encoding more than one trans-acting ribozyme.

20 20. The nucleic acid of claim 19, wherein the trans-acting ribozymes are targeted to different sites on the same target-RNA.

21. The nucleic acid of claim 19, wherein the trans-acting ribozymes are targeted to
25 different target-RNAs.

22. The nucleic acid of claim 2, encoding more than one ribozyme cassette.

23. The nucleic acid of claim 2, encoding at least two different ribozymes cassettes.

30 24. The nucleic acid of claim 2, encoding more than one copy of a ribozyme cassette.

25. The nucleic acid of claim 2, wherein at least one ribozyme cassette is targeted to a transcript selected from the group consisting of: *rpoA*, *secA*, *dnaG*, *ftsZ*, and *tRNA-Asp*.

26. The nucleic acid of claim 2, wherein at least one ribozyme cassette is operably linked to a promoter selected from the group consisting of: pol II, HBV, pol III, RB, IGF1, SH, pol I, HPV, C3, C9, B2, Tel, TGF β , CAT, PpaRa, p4501E1, AR, and SF1.

5 27. A method of treating an infection in a subject, comprising administering to the subject the virion of claim 12 whereby the ribozyme(s) encoded by the nucleic acid is expressed and the infectious agent is killed or weakened.

10 28. A method of treating an infection in a subject, comprising administering to the subject the liposome of claim 5 or 6, whereby the ribozyme(s) encoded by the nucleic acid is expressed and the infectious agent is killed or weakened.

15 29. A method of treating a tissue-specific disease in a subject, comprising administering to the subject the virion of claim 12 whereby the ribozyme(s) encoded by the nucleic acid is expressed and the diseased tissue ameliorated.

30. A method of treating a tissue-specific disease in a subject, comprising administering to the subject the liposome of claim 5 or 6, whereby the ribozyme(s) encoded by the nucleic acid is expressed and the diseased tissue ameliorated.

20 31. The method of claim 27 wherein the infection is a bacterial infection, a viral infection, a fungal infection, or a parasitic infection.

32. The method of claim 28 wherein the tissue-specific disease is a proliferative disease, 25 a malignant disease, or a cancer.

33. A method of targeted delivery of one or more ribozyme(s) to a pathogen in a subject, comprising:

30 a) generating a virion of claim 12; and
 b) delivering the virion to the subject,
whereby the pathogen-specific promoter directs transcription of the ribozyme in the cells of the pathogen.

34. A method of targeted delivery of a ribozyme to a pathogen in a subject, comprising
a) generating a liposome of claim 17; and
b) delivering the liposome to the subject,
whereby the pathogen-specific promoter directs transcription of the ribozyme in the cells of
5 the pathogen.

35. The nucleic acid of claim 1 or 2 that is stabilized by a hairpin loop.

36. The nucleic acid of claim 2 wherein multiple ribozyme cassettes are linked together
10 by at least 4 to 5 nucleotides.

37. The recombinant nucleic acid of claim 1, wherein the pathogen-specific promoter is
an ARN promoter, PROC promoter, or ARC promoter.

15 38. The recombinant nucleic acid of claim 1, wherein the tissue-specific promoter is a
K4 promoter, K7 promoter, K13 promoter or albumin promoter.

20

25

30

35